

Application No. 09/831,223  
Amendment dated June 24, 2003  
Reply to Office Action dated December 24, 2002

REMARKS

Claims 21-43 are pending. Claims 21 and 39 have been amended hereby.

The Applicant thanks the Examiner for discussing the present application on May 15, 2003 with the undersigned at which time U.S. Patent No. 5,103,199, which corresponds to JP 3-110734, was discussed.

The Examiner has rejected claims 21-43 under 35 U.S.C. § 103(a) as being unpatentable over JP 3-110734 in view of Corcoran (U.S. 6,081,177). The Examiner argues, *inter alia*, that JP 3-110734 discloses the claimed invention except for the specific use of spring contacts, their mounting within the actuator and the specific arrangement thereof. The Examiner further argues that Corcoran rectifies these deficiencies by disclosing the use of spring contacts in a relay having first and second contact sets utilizing a single actuator and contact sets being inserted into grooves within a base support portion. More specifically, the Examiner argues that JP 3-110734 discloses "a coupling member [60a] cooperating with the at least one actuator to engage/disengage the contact sets, wherein the contact banks lie in mirror-image symmetry relative to the coupling element." As discussed in greater detail below, element 60a is an interlock pin that prevents the contact sets that are adjacent the opposite ends of the coupling pin from both being simultaneously closed. The coupling pin does not mechanically connect two relays.

Claim 21, and claims 22-35 which depend therefrom, call for a relay with coupling element, comprising: at least one spring bracket, a drive disposed on the spring bracket and which acts over an actuator on at least one active contact spring which cooperates with at least one passive contact spring anchored in the spring bracket, at least one of the active and passive contact springs being electrically contactable through a connection contact; characterized in that the relay is mechanically connectable with at least one further relay of the same kind wherein each of the relays have a similar configuration, a coupling element constructed as a separate component engagable with coupling devices disposed on the spring brackets of the respective relays to thereby provide the mechanical connection between the respective relays, electric connection contacts of the contact springs of the respective relays being disposed proximate the respective coupling devices, and further characterized in that the coupled relays lie in mirror-image symmetry relative to the coupling element.

Application No. 09/831,223

Amendment dated June 24, 2003

Reply to Office Action dated December 24, 2002

Thus, the coupling element called for in claims 21-35 provides for the mechanical connection of two relays. The coupling member disclosed in JP 3-110734 is described in corresponding U.S. Patent No. 5,103,199. As discussed in the '199 patent at col. 5, lines 34-65, interlock pin 60 is slidably positioned between electromagnetic contactor 300a and 300b such that when right electromagnetic contactor 300a is energized, crossbar 10a presses interlock pin 60 in the direction shown by arrow Y in Figure 1. If electromagnetic contactor 300b is then energized, crossbar 10b will move in the direction shown by arrow X in Figure 1 but will be stopped by interlock pin 60 thereby preventing left side electromagnetic contactor 300 from contacting with fixed contact 17b. Thus, it is clear that interlock pin 60 does not provide for the mechanical connection of two relays as called for in claim 21 but instead performs a very different function, preventing the simultaneous closure of contactors 300a and 300b. Nor does Corcoran disclose or suggest a coupling element constructed as a separate component engageable with coupling devices disposed on the spring brackets of respective relays to thereby provide the mechanical connection between the respective relays and wherein the coupled relays lie in mirror-image symmetry relative to the coupling element as called for in claim 21. It is noted that in citing Corcoran the Examiner refers to U.S. Patent No. 6,081,177 which is issued to Fausch. U.S. Patent No. 5,805,040 has issued to Corcoran. Neither of these patents, however, disclose a coupling element constructed as a separate component engageable with coupling devices disposed on the spring brackets of respective relays to thereby provide the mechanical connection between the respective relays and wherein the coupled relays lie in mirror-image symmetry relative to the coupling element as called for in claim 21.

It is further noted that the structure called for in claim 21 provides several advantages. For example, by disposing the connection contacts of the respective relays proximate the coupling devices, when two relays are coupled together with the coupling element, the connection contacts of the relays will be positioned relatively closely together thereby facilitating a reduction in circuitry costs.

Furthermore, providing a coupling element to mechanically couple together two relays having a similar configuration allows for each of the relays to work independent of the other relay since each relay includes its own drive. The mechanically coupled relays may thereby be electrically coupled together to define a single contact path in which both relay

Application No. 09/831,223

Amendment dated June 24, 2003

Reply to Office Action dated December 24, 2002

drives must be actuated to fully close the contact path and thereby define a logical AND condition. In relay configurations where actuating a single drive closes two separate contacts, no such logical AND condition is created. The structure called for in claim 21 couples two relays together in a manner which allows for the creation of such a logical AND condition.

Thus, claims 21-35 are patentable over the cited references and the allowance of claims 21-35 is respectfully requested.

Claim 39 calls for a relay assembly with coupling element that comprises at least two relays, each relay having at least one spring bracket, a drive disposed on the spring bracket and which acts over an actuator on at least one active contact spring which cooperates with at least one passive contact spring anchored in the spring bracket, at least one of the active and passive contact springs being electrically contactable through a connection contact; characterized in that the at least two relays are mechanically connectable, a coupling element constructed as a separate component engagable with coupling devices disposed on the spring brackets of the respective relays to thereby provide the mechanical connection between the respective relays, electric connection contacts of the contact springs of the respective relays being disposed proximate the respective coupling devices, and further characterized in that the at least two coupled relays lie in mirror-image symmetry relative to the coupling element and wherein the coupling element is releasably coupled.

Thus, claim 39 also calls for a relay assembly with coupling element wherein at least two relays are mechanically connectable and a coupling element constructed as a separate component engageable with coupling devices disposed on spring brackets of the respective relays which thereby provides the mechanical connection between the respective relays and wherein the at least two coupled relays lie in mirror-image symmetry relative to the coupling element is releasably coupled. As discussed above, interlock pin 60 disclosed in U.S. 5,103,199 (and JP 3-110734) does not provide such a mechanical connection function. Nor does Corcoran or Fausch rectify this deficiency. Furthermore, it is noted that by providing a coupling element that releasably couples at least two relays together, one of the relays can be exchanged if it is damaged without requiring the replacement of the other undamaged relay thereby facilitating a reduction in costs. Thus, claim 39 is allowable over the cited references and the allowance of claim 39 is respectfully requested.

Application No. 09/831,223  
Amendment dated June 24, 2003  
Reply to Office Action dated December 24, 2002

Claim 40, and claim 41 which depends therefrom, calls for a relay assembly with coupling element that comprises at least two relays, each relay having at least one spring bracket, a drive disposed on the spring bracket and which acts over an actuator on at least one active contact spring which cooperates with at least one passive contact spring anchored in the spring bracket, at least one of the active and passive contact springs being electrically contactable through a connection contact; characterized in that the at least two relays are mechanically couplable, a coupling element constructed as a separate component engagable with coupling devices disposed on the spring brackets of the respective relays, electric connection contacts of the contact springs of the respective relays being disposed proximate the respective coupling devices, and further characterized in that the at least two coupled relays lie in mirror-image symmetry relative to the coupling element and wherein the active and/or passive contact springs of the spring brackets of the at least two relays are also electrically coupled with one another across the coupling element.

Thus, claim 40 calls for a relay assembly that includes at least two relays that are mechanically couplable and a coupling element constructed as a separate component engageable with coupling devices disposed on the spring brackets of the respective relays and wherein the active and /or passive contact springs of the spring brackets of the at least two relays are also electrically coupled with one another across the coupling element.

As discussed above, the interlock pin 60 disclosed by U.S. 5,103,199 (and JP 3-110734) prevents the simultaneous closing of two contacts. The pin does not provide for the electrical coupling of two relays nor does it suggest such an electrical coupling. Nor does either Corcoran or Fausch disclose or suggest a coupling element constructed as a separate component engagable with coupling devices disposed on the spring brackets of respective relays wherein at least two coupled relays lie in mirror-image symmetry relative to the coupling element and wherein the active and/or passive contact springs of the spring brackets of the at least two relays are also electrically coupled with one another across the coupling element as called for in claim 40. Thus claims 40 and 41 are patentable over the cited references and the allowance of claims 40 and 41 is respectfully requested.

Claim 42, and claim 43 which depends therefrom, calls for a relay with coupling element that comprises at least one spring bracket, a drive disposed on the spring bracket and which acts over an actuator on at least one active contact spring which cooperates with at

Application No. 09/831,223  
Amendment dated June 24, 2003  
Reply to Office Action dated December 24, 2002

least one passive contact spring anchored in the spring bracket, at least one of the active and passive contact springs being electrically contactable through a connection contact; characterized in that the relay is mechanically couplable with at least one further relay of the same type to provide at least two relays wherein each of the relays have a similar configuration, a coupling element constructed as a separate component engagable with coupling devices disposed on the spring brackets of the respective relays, electric connection contacts of the contact springs of the respective relays being disposed proximate the respective coupling devices, and further characterized in that the at least two coupled relays lie in mirror-image symmetry relative to the coupling element and wherein said coupling element includes at least one groove and at least one multiple contact spring slidably mounted in the groove and electrically coupling the passive and/or active contact springs of the spring brackets of said relays with one another across the coupling element.

Thus, claim 42 calls for a relay with coupling element wherein the relay is mechanically couplable with at least one further relay and a coupling element constructed as a separate component engagable with coupling devices disposed on the spring brackets of the respective relays and wherein the coupling element includes at least one groove and at least one multiple contact spring slidably mounted in the groove and electrically coupling the passive and/or active contact springs of the spring brackets of the relays with one another across the coupling element.

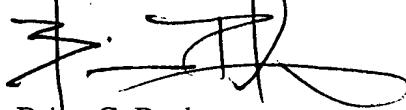
As discussed above, the interlock pin 60 disclosed by U.S. 5,103,199 (and JP 3-110734) prevents the simultaneous closing of two contacts. The pin does not provide for the electrical coupling of two relays nor does it suggest such an electrical coupling. Neither does either Corcoran or Fausch disclose or suggest a coupling element constructed as a separate component engagable with coupling devices disposed on spring brackets of the respective relays and wherein the at least two coupled relays lie in mirror-image symmetry relative to the coupling element and wherein the coupling element includes at least one groove and at least one multiple contact spring slidably mounted in the groove and electrically coupling the passive and/or active contact springs of the spring brackets of the relays with one another across the coupling element as called for in claim 42. Thus, claims 42 and 43 are patentable over the cited references and the allowance of claims 42 and 43 is respectfully requested.

Application No. 09/831,223  
Amendment dated June 24, 2003  
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In the event Applicant has overlooked the need for any extension of time or payment of fee, Applicant hereby petitions therefor and authorizes that any charges be made to Deposit Account No. 02-0385, Baker & Daniels. Should the Examiner have any further questions regarding any of the foregoing, the Examiner is respectfully invited to telephone the undersigned at (260) 424-8000.

Applicant respectfully requests that a timely Notice of Allowance be issued in this application.

Respectfully submitted,



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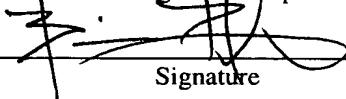
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I HEREBY CERTIFY THAT THIS correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on: June 24, 2003.

BRIAN C. PAULS, REG. NO. 40,122

Name of Registered Representative



Signature

June 24, 2003

Date